2023

माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

32 पृष्ठीय

परीक्षार्थी द्वारा भरा जावे ↓

परीक्षा का विषय	विषय कोड	परीक्षा का माध्यम
Chemistry	220	English

स्टीकर तीर के निशान ↓ से मिलाकर लगाएं

क्रमांक B-23

4760116

परीक्षार्थी का रोल नम्बर

अंकों में

–	2	3	4	5	2	6	1	9	1

शब्दों में

–	TWO	THREE	FOUR	FIVE	TWO	SIX	ONE	NINE	ONE

नीचे दिये गये उदाहरण अनुसार रोल नम्बर भरें।

उदाहरणार्थ

1	1	2	4	3	9	5	6	8
एक	एक	दो	चार	तीन	नौ	पांच	छः	आठ

न पत्र का सेट 8

– परीक्षार्थी का कक्ष क्रमांक 09

– परीक्षा का दिनांक 17 03 2023

क्षा का नाम एवं परीक्षा केन्द्र क्रमांक की मुद्रा

हायर सेकण्डरी परीक्षा 451013

वेक्षक का नाम एवं हस्ताक्षर

Tuaibh
जी पुत्त राजपूत

केन्द्राध्यक्ष / सहायक केन्द्राध्यक्ष के हस्ताक्षर

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे ↓

णित किया जाता है कि होलो क्रापट स्टीकर क्षतिग्रस्त नहीं पाया गया तथा अन्दर के ों के अनुरूप मुख्य पृष्ठ पर अंकों की प्रविष्टी एवं अकों का योग सही है।

ारित मुद्रा : नाम, पदनाम, मोबाईल नम्बर, परीक्षक क्रमांक एवं पदांकित था के नाम की मुद्रा लगाएं।

मुख्य परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा

P. Joshi
9551209

परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा

S.L.PAWAR
551[illegible]

केवल परीक्षक द्वारा भरा जावे।
प्रश्न क्रमांक के सम्मुख प्राप्तांकों की प्रविष्टी करें।

प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्तांक (अंकों में)
1		
2		
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कुल प्राप्तांक शब्दों में ... कुल प्राप्तांक अंकों में

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Ans of Q.1.

(i) +4.

(ii) Finkelstein reaction.

(iii) RONa.

(iv) CF_3COOH

(v) $\pi = \frac{nRT}{V}$.

(vi) 2.

(vii) Ce

Ans. of Q.2.

(i) Orange

(ii) Ethylenediaminetetraacetate.

(iii) 4-Nitroanisole and 2-Nitroanisole
(major) (minor)
(or)
p-nitroanisole and O-nitroanisole.

(ii) More

(iv) Riboflavin Pyridoxine.

(v) 55.6 Mol%

(vi) Zero (0).

Ans of Q.3.

A	B
(i) R-O-R.	Ether.
(ii) Hoffmann bromide.	Primary Amine.
(iii) Milk sugar.	Lactose.
(iv) Sucrose.	$C_{12}H_{22}O_{11}$
(v) Aldohexose.	Glucose.
(vi) Mn.	+7
(vii) Primary valence.	Negative ions

BSE

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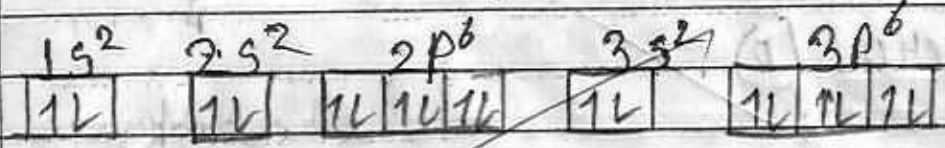
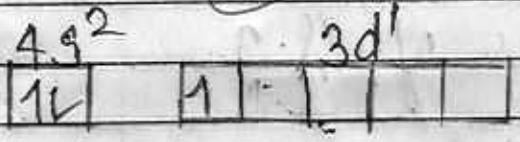
Ans. of Q.4.

(i) Scandium.

$Z = 21$

Electronic Configuration → $[Ar]^{18} 4s^2 3d^1$

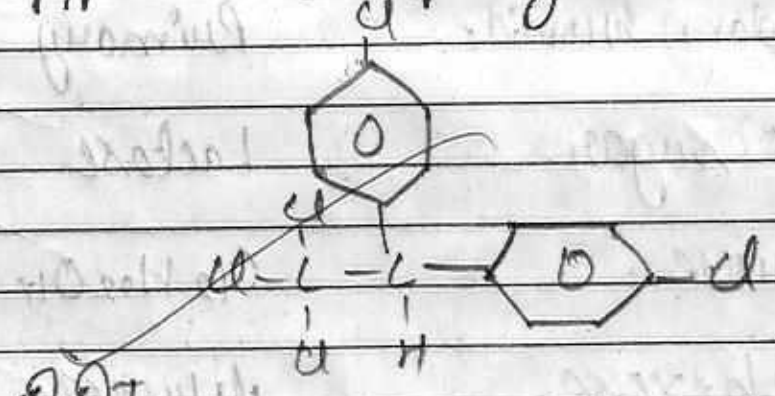




(ii) Chemical name of DDT →

→ ~~p,p'- Dichlorodiphenyltet~~

→ p,p'- Dichlorodiphenyltrichloroethane.



DDT.

(iii)

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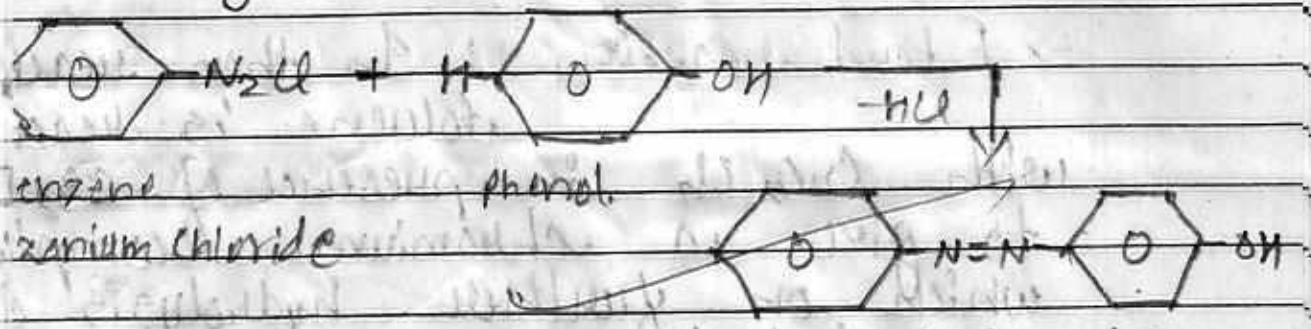
(iii) Coupling reaction :-



(iv) Hinsberg's reagent → $C_6H_5SO_2Cl$ (benzenesulphonyl chloride).

(v) α-aminoacids are monomers of protein.

(vi) Molar Conductivity → Λ_m

$$\Lambda_m = \frac{K}{C}$$

Unit → $S\,cm^2\,mol^{-1}$

$$\text{or } \Lambda_m = \frac{K \times 1000}{M}$$

(vii) unit of rate constant for zero order reaction → $mol\,L^{-1}\,sec^{-1}$

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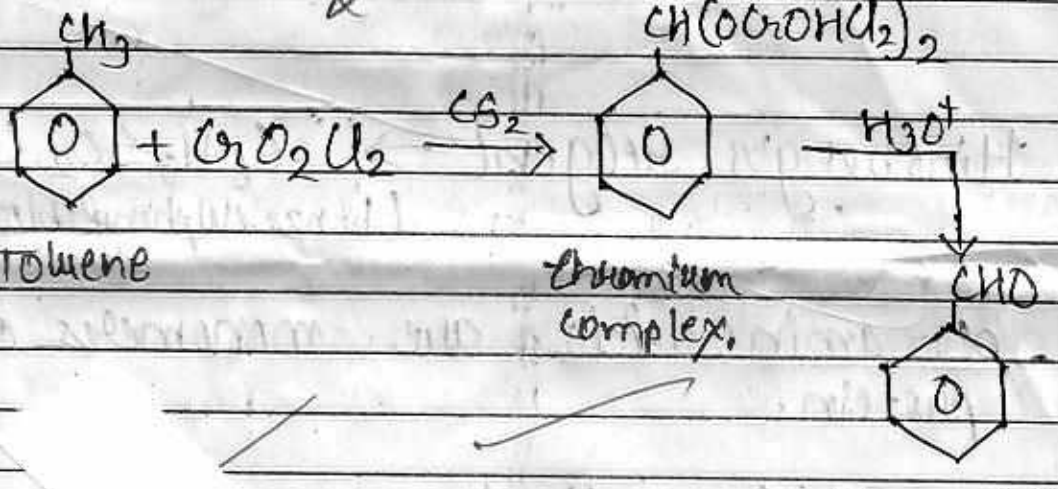
Ans. of Q. 5.

→ Etard reaction → In then reaction, toluene is react with CrO_2Cl_2 in presence of CS_2 to give a chromium complex which on further hydrolysis gives benzaldehyde.

Chemical Eqn →



Ans. of Q. 6.

$CH_3-CH_2-Cl \xrightarrow[\text{Ethanol}]{NaCN} CH_3-CH_2-CN$

Cloride.

(ii) H_2O (i) $LiAlH_4$ (Reduction)

$CH_3-CH_2-CH_2-NH_2$

propan-1-amine

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Ans. of Q. 7. (or)

DNA	RNA.
Deoxyribonucleic Acid	Ribonucleic Acid.
(i) It has 2-deoxyribose sugar.	(i) It has ribose sugar.
(ii) It has double strands	(ii) It has single strands.
(iii) It is heridity material in all organism.	(iii) It is used in protein synthesis, as a catalyst in metabolic reaction.
(iv) It has unique property of replication	(iv) It does not replicate.

Ans. of Q. 8.

→ **Mole fraction** → It is the ratio of nonumber of moles one component of solution and number of moles of solute and solvent.

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(or)

It also defined as a number of moles of solute or solvent and Total number of moles of solution solute and Solvent. It is denoted by 'x'.

i.e.,

$$x_A = \frac{n_A}{n_A + n_B}$$

or

$$x_B = \frac{n_B}{n_A + n_B}$$

where,

x_A and x_B → mole fraction of solute and solvent.

n_A → no. of moles of solute.

n_B = no. of moles of solvent.

e → Mole fraction of solution is always 1.

$$x_A + x_B = 1$$

Ans. of Q. 9.

→ Salt bridge → The inverted 'U' tube which connect the two solutions in electrochemical

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ell filled with salt (KCl), and a cotton is plugged at both the end of the tube, is called salt bridge.

Function → It exchange the ions and also stabit stablise the solution it by exchanging of ions used in using the products of electrochemical cell.

Ans. of Q. 10.

Molecul Order of Reaction	Molecularity.
(i) It is the sum of the power of concentration of reactant	(i) It is the number of reacting species (atom, ion, molecule) taking part in chemical reaction

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(ii) It can be zero or even fraction	(ii) It is always an integer, it cannot be zero.
(iii) It is experimental value	(iii) It is theoratical value.
(iv) It is applicable for both elementary as well as complex reaction	(iv) It is only for elementary reaction.

Ans of Q. 11.

(i) $[Co(NH_3)_6]Cl_3$

IUPAC name →

Hexaamminecobalt(III) chloride

(ii) $K_2[Ni(CN)_4]$.

IUPAC name. →

Potassium tetracyanidonickelate(II)

Ans. of Q. 12. (or)

Hydrate isomerism → It is also known as solvate isomerism. This type of isomerism arise when the water molecule are present freely as a solvent or directly bonded with central atom.

(or)

The isomerism which arise when another water molecule is a solvent or ligand.

→ $[Co(NH_3)_6]Cl_3$ → (violet)

$[Cr(H_2O)_5Cl]Cl_2 \cdot H_2O$ → (greygreen)

Ans. of Q. 13. (or)

Reasons	Lanthanoid	Actinoid
Electronic Configuration	$(n-2)4f^{1-14}(n-1)5d^{1-10}(n)6s^{1-2}$	$(n-2)5f^{1-14}(n-1)6d^{1-10}(n)7s^{1-2}$
Oxidation state.	They show oxidation state +2, +3, +4, but the most common is +3.	They show oxidation state +3, +4, +5, +6 but most common is +3 (except Th → +4).

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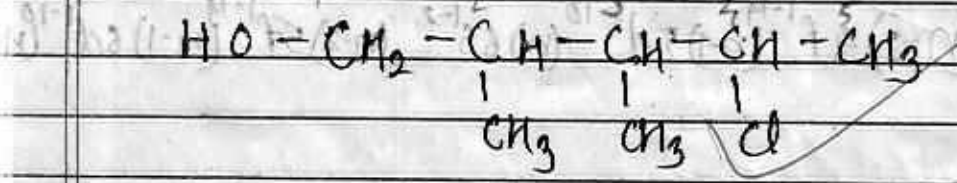
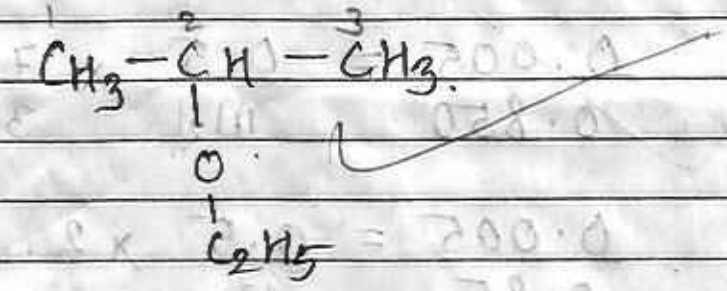
Atomic & Ionic radii.	Decrease with increase in atomic number is called lanthanoid contraction.	Decrease with increase in atomic number is called Actanoid contraction
Chemical Reactivity	All are chemically reactive. Except promethium all are non-radioactive.	All are radioactive element.
Basicity.	Their complexes are less basic	Their complexes are more basic.

Ans. of Q.14. (or).

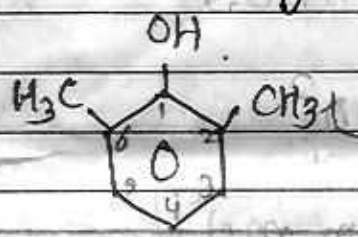
(i) 4- Chloro 2,3-dimethyl pentan-1-ol.



(i) 2 ethoxy propane.



(i) 2,6 dimethyl phenol.



Ans. of Q. 15

Given that.

$P_1^\circ = 0.850$ bar.
$P_1 = 0.845$ bar.
$W_2 = 0.5$ gm
$W_1 = 39.$ gm.
$M_1 = 78$ gm mol^{-1}

By Vault law. → $\left| \frac{P_1^\circ - P_1}{P_1^\circ} = \frac{W_2}{M_2} \times \frac{M_1}{W_1} \right|$

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$$\frac{0.850 - 0.845}{0.850} = \frac{0.5}{m_2} \times \frac{78}{39}$$

$$\frac{0.005}{0.850} = \frac{0.5}{m_2} \times \frac{78}{39}$$

$$\frac{0.005}{0.85} = \frac{0.5}{m_2} \times 2$$

$$m_2 = \frac{0.5 \times 2 \times 0.85}{0.005}$$

$$m_2 = 1.70 \times 10^2$$

Ans ⇒ $\boxed{m_2 = 170 \text{ gm mol}^{-1}}$

Ans. of 0.16

(i) Unit of rate constant for first order reaction → n=1

Unit → sec^{-1}

for second order reaction

$$\boxed{K = \frac{\text{conc}}{\text{time}} \times \frac{1}{(\text{conc})^n}}$$

$$K = \frac{mol\,l^{-1}}{sec} \times \frac{1}{(mol\,l^{-1})^1}$$

$$\boxed{K = sec^{-1}}$$

for second order, $n = 2$.

$$K = \frac{(Conc)}{time} \times \frac{1}{(Conc)^2}$$

$$K = \frac{mol\,l^{-1}}{sec} \times \frac{1}{(mol\,l^{-1})^2}$$

$$K = mol^{-1}\,l\,sec^{-1}$$

$$\boxed{\text{Unit} \rightarrow mol^{-1}\,l\,sec^{-1}}$$

Ans of Q. 17. (or)

i) **Sandmeyer's reaction** → By this reaction we can obtain haloarenes. In this freshly prepared benzenediazonium salt is treated with Cu_2X_2 in presence of mineral acid 'HX' to yield haloarenes.

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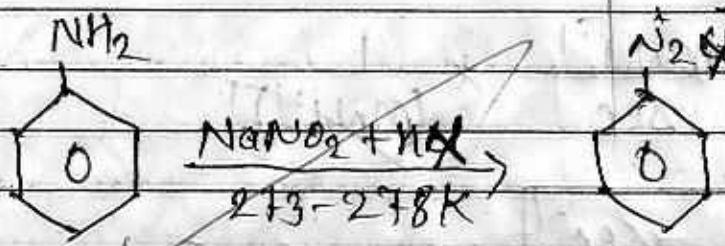
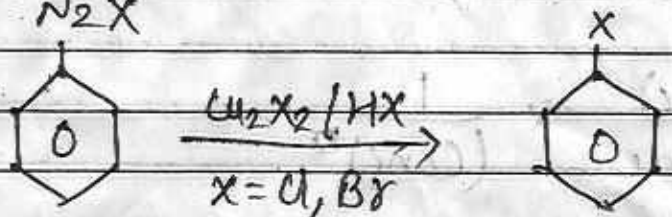


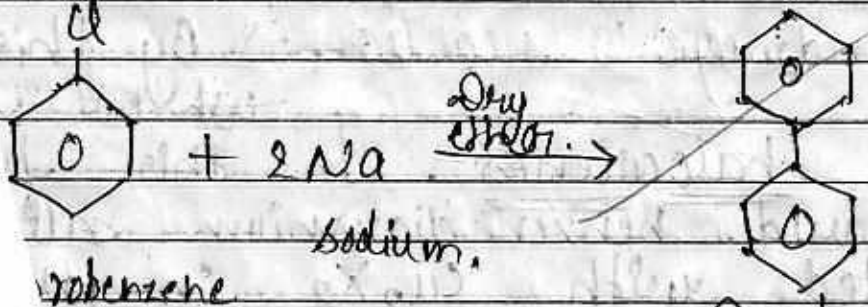
Aniline

benzene diazonium salt.



haloarenes.

(ii) Fitting reaction. → When Chlorobenzene is reacted with sodium metal in presence of Dry ether gives Diphenyl., is called Fitting reaction.



Chlorobenzene

Diphenyl.

Ans. of Q. 12. (Or).

(i)

$$CH_3-CH_2-CH_2-CHO \xrightarrow[\text{Tollen's Reagent}]{\text{Ammonical } AgNO_3} CH_3-CH_2-CH_2-COO^- + 2Ag + 2H_2O$$

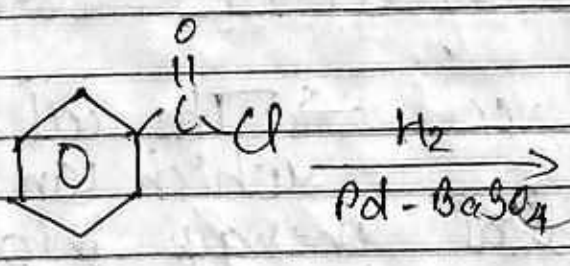
(i)

$$\text{>C=O} \xrightarrow[HCl]{Zn\text{-}Hg} \text{>}CH_2 + H_2O$$

(Clemenson reduction)

Hydrocarbon.

(i)



(Rosenmund reaction)

Benzaldehyde

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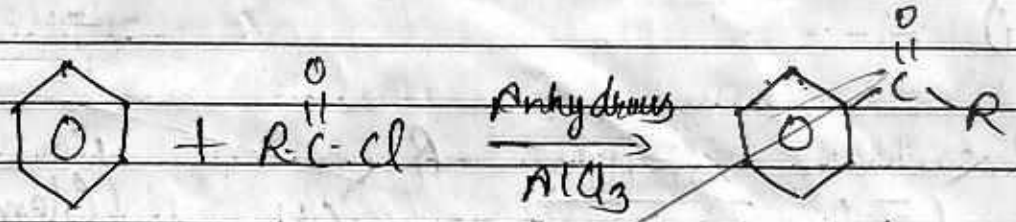
(iv)

$$RCN \xrightarrow[2.\ H_2O]{1.\ AlH(i\text{-}Bu)_2} R\text{-}CHO$$

Aldehyde.

(v)



Ketone + HCl.

(F.C. reaction)

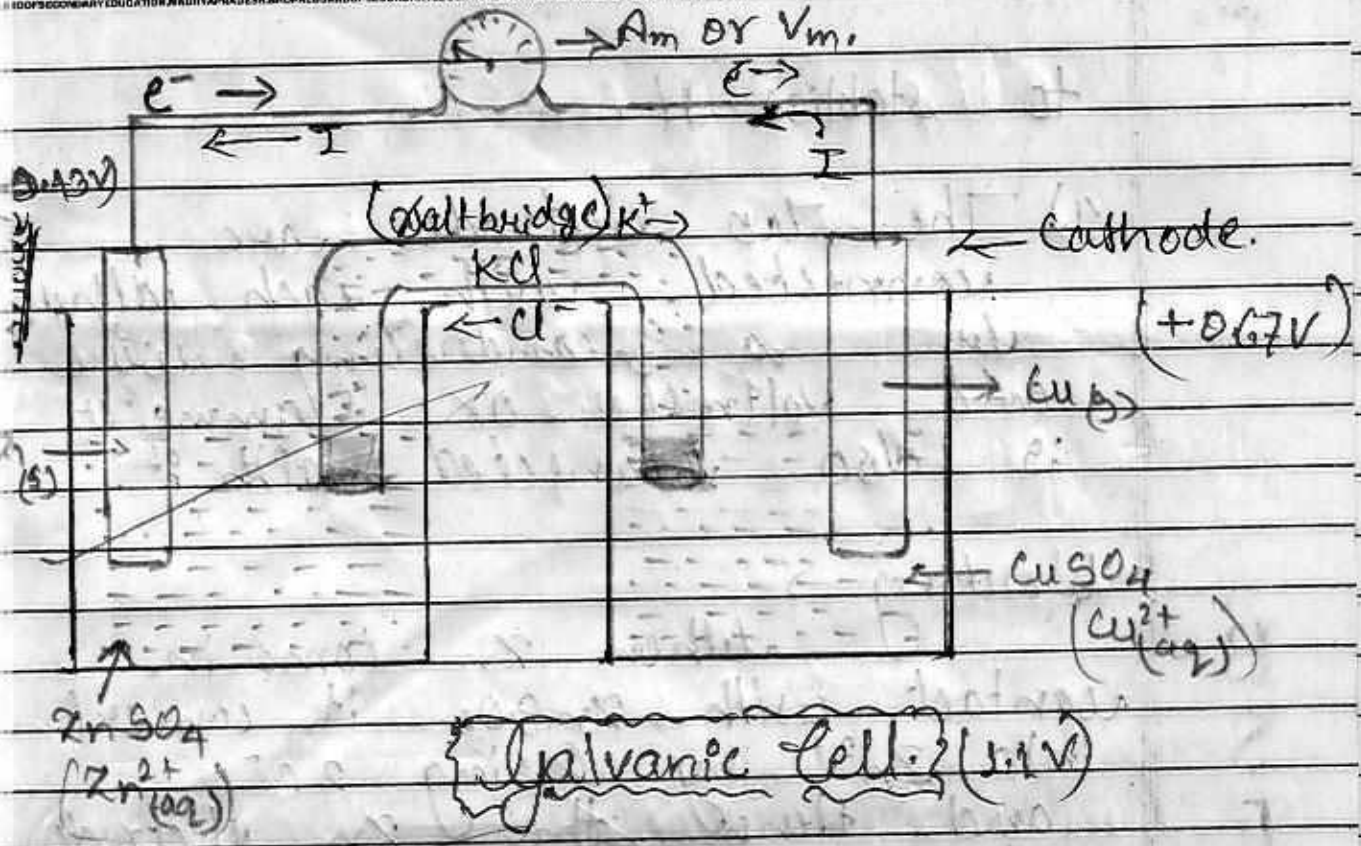
Ans. of Q. 19.

Electrochemical cell → The cell which can convert chemical energy into electrical energy. is called electrochemical cell.

Galvanic cell give potential of 1.1 V.

Diagram →

(P.T.O)



Structure or Construction →

1) It consist a $Zn_{(s)}$ (Zinc) electrode as anode and $Cu_{(s)}$ (copper) electrode as cathode.

2) Both the electrodes are dipped in their salt solutions → Zn in $ZnSO_4$ and Cu in $CuSO_4$

3) Both the solutions are connected to each other by a inverted 'U' tube which consist strong salt. (KCl). for exchange of ions

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to stablise it.

4) The two electrode are connected with each other by a conducting wire and voltmeter or ammeter is also connected with it.

Working →

. When Zn come in contact with $ZnSO_4$ it convert into Zn^{2+} by losing $2e^-$ and Hence the Zn electrode get start dissolving.

And $2e^-$ of Zn^{2+} are transferred through the wire and gained by Cu^{2+} which then get convert into Cu and Hence Cu start dipositi on this cathode electrode.

In this process, Zn is oxidised while the Cu^{2+} is reduced.

Half cell → The electrode where oxidation take place is called oxidation half cell. while where reduction → called reduction half cell.

Cell reactions →

At Anode →

$Zn_{(s)} \longrightarrow Zn^{2+}_{(aq)} + 2e^-$ (Oxidation) half-cell.

$E^\circ_{(Zn^{2+}/Zn)} = -0.43$

At Cathode →

$Cu^{2+}_{(aq)} + 2e^- \longrightarrow Cu_{(s)}$ (Reduction) half cell

$E^\circ_{(Cu/Cu^{2+})} = +0.67$

Total cell reaction →

$Zn_{(s)} + Cu^{2+}_{(aq)} \longrightarrow Zn^{2+}_{(aq)} + Cu_{(s)}$ (Redox reaction)

$\boxed{E^\circ_{cell} = 1.1\ V.}$

Cell Representation →

Anode $Zn_{(s)} / \underset{\text{or } Zn^{2+}_{(aq)}}{ZnSO_4} (1M) \,||\, (1M) \underset{\text{or } Cu^{2+}}{CuSO_4(aq)} / Cu_{(s)}$ Cathode

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Cell potential. (emf).

$$E^\circ_{cell} = E_{right} - E_{left}$$

$$= +0.67 - (-0.43)$$

$$= +0.67 + 0.43$$

$$\boxed{E^\circ_{cell} = 1.1\,V}$$

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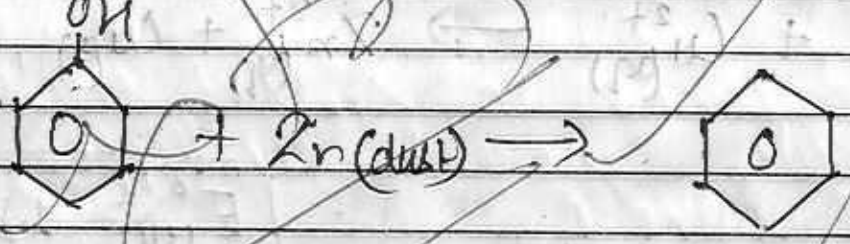
Ans. Of Q. 14.

(i) $R-X + RONa \longrightarrow R-O-R + NaX$

(Wilkinson synthesis)

(ii)



(iii) $C_2H_5OH + H_2SO_4 \xrightarrow{413\,K} C_2H_5OC_2H_5$

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Ans. of Q. 18.

(18)

(iii) $CH_3COOH + PCl_5 \longrightarrow CH_3COCl + HCl + POCl_3$

(v) $CH_3COOH + NH_3 \xrightarrow{\Delta} CH_3CONH_2$

(vi) $CH_3COOH \xrightarrow[(ii)\,H_2O]{(i)\,LiAlH_4} CH_3CH_2OH$

$CH_3COOH + CH_3COCl \xrightarrow[-HCl]{} (CH_3CO)_2O$